Sand Dune and Shingle Network

Seventeenth Newsletter, July 2013
Linking science and management

European Dune Network
Sharing experience across borders

Liverpool Hope University EST. 1844

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Seventeenth newsletter, July 2013
Edited by John Houston and Mark Whitfield, http://coast.hope.ac.uk/

Introduction

Paul Rooney

Director – Sand Dune and Shingle Network

Welcome to seventeenth newsletter of the UK Sand Dune and Shingle Network. The interest in working with natural processes to kick-start dune mobility is now becoming main stream with many projects in the Netherlands and a national programme now launched in Wales. These are exciting projects which hope to rejuvenate pioneer and early succession habitats at a significant scale.

However, as well as the enthusiasm for seeing dune mobility on a large scale we also need to champion the importance of bare sand and open areas to many of the specialist species of the dunes. Therefore we hope that the recognition of the value of bare sand can also be taken up by the managers of golf courses, military sites and forestry areas as well as nature reserve managers. Small pockets of bare sand, open south facing slopes, unplanted clearings in forests, the edges of well used footpaths, the tracks made by military vehicles, bomb craters, small sand quarries and turf stripping areas can all contribute to the habitat needs of species which require open conditions and bare sand.

Large scale dune mobility, and blowout features, are vital too, however, as they have the ability to be driven by geomorphological processes. We still don't really know why some blowout features can be sustained for many decades, why some stabilise after years of mobility and why it can be so difficult to trigger new blowout features. There is no single recipe for success but we are developing a large body of knowledge and information on dune mobility. It is a subject area which lends itself to networking.

From a UK perspective we applaud Natural Resources Wales for the courage to experiment with dune re-mobilization projects at several well known dune sites. This is a result of evidence showing how the stabilization of Welsh dune systems had impacted on pioneer vegetation communities and on invertebrates, of consultation with stakeholders to gauge the level of support for remobilization, of seeking expert geomorphological advice and of putting plans into action. We look forward to following this work and of visiting the sites over the coming years.

The work in Wales is supported by earlier and ongoing work in the Netherlands and we can report again on a number of new projects from the Netherlands, now focusing on the transport corridor from the beach zone through the foredune zone to the inner dunes. News of these projects in the Netherlands will also feature in our next European newsletter.

But we also have to be careful that our new found enthusiasm for bare sand does not go so far as to destroy other features of the dune systems. And we also recognise that at many sites, such as Baglan Burrows, for example, (see report on page 5) there is a need for some control on recreation pressure. You can sometimes have too much of a good thing!

We look forward to meeting some of you at the Sand Dune Hydro-Ecology meeting and at the Coastal Cliffs and Lake Bluffs symposium, both in September.

Network News

Mark Whitfield

Network Assistant

I am pleased to announce that since the last newsletter our new website http://coast.hope.ac.uk/ is up and running and we will be continuing to develop this resource. I would also like to thank our members who took part in the online survey. We received some good feedback and you can see a summary of the survey findings on the next page.

The Network is a forum for sharing news and information on management practices and studies. We would like to hear from site managers on a more regular basis. Just send us news snippets by e-mail or Twitter, and we will try to follow up your stories. We are particularly interested to receive more case study information on experiences with sand dune management and Shoreline Management Plans. We need to identify dune sites with long term projects which could help host one of our workshop events.

We also invite you to the Coastal Cliffs and Lake Bluffs symposium which will be held in Llandudno in September (see details on the back page) where coastal experts, several from the UK statutory agencies, will present papers on the geomorphology, geology and nature conservation value of coastal cliffs (see www.hope.ac.uk/cliffs).

Currently we have over 277 members of the network and we have a mailing list of about 510 contacts in the UK, Europe and worldwide. About 25% of our members are from EU countries and we think that this is a healthy balance to ensure that in our networking can make the most of best practice across Europe. In the UK most of our members are in England and we do hope to attract more members from Scotland, Wales and Ireland over the coming years.

The network newsletters will be published in November 2013, March 2014 and July 2014 so please start planning your submissions! The November 2013 and July 2014 newsletters will also be European newsletters. Please keep in touch on dunes@hope.ac.uk

Sand Dune and Shingle Network Membership Survey

In April we conducted a short online membership survey on the theme of improving how we communicate with our members and what our future newsletter themes should include. The outcome of the survey will help guide the Network and help us plan future workshop events. With the launch of our new website http://coast.hope.ac.uk/ we were keen to see what our members thought of the new layout. We also gathered some information about members' jobs to help us understand the profile of the network membership. We found, for example, that many of our members are ecologists working for government bodies: so we will ensure that we are also up to date with government policy to provide relevant support and advice.

We asked members for information on their highest level of education, choosing from secondary school, college, undergraduate degree and postgraduate degree. Of the 68 members responding, 56% (n=38) were educated to postgraduate level, 40% (n=27) to undergraduate level and 4% (n=3) to college level. Thus all had an education level higher than secondary school. We could interpret this as indicating that the Network has a good number of experts, so for less experienced members the network can offer access to experience and skills. This is what we try to achieve at our workshops and field meetings.

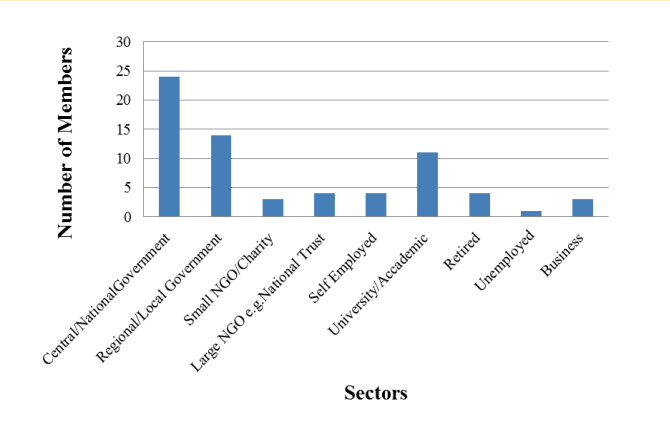

Table 1: Number of members working in various industry sectors

The Network has several members from outside the UK, and although the response from non-UK members was limited in this survey, we are aware of the importance of networking at the international level.

Central or National Government was the most represented sector accounting for 35% (n=24) of members responding to the survey. Regional and Local Government and University and Academic were also significant sectors with 21% (n=14) and 16% (n=11) respectively.

In terms of role the largest group is ecologists, followed by academic and research, site manager, warden/ranger and civil service. 'Volunteer' was the only category not selected by any members.

Sand Dune and Shingle Network Services

Network services are the ways in which we communicate and deliver information and advice to our members. Whether it is updates and news on coastal events, conferences or the latest changes in nature conservation policy the Network tries to keep its members up to date and informed. Working with various organisations and professionals bringing together knowledge and expertise on these dynamic coastal habits, the Network services are a key component in delivering this information and idea sharing. The data in (Table 2) shows that the most useful component for reaching our members and providing information is the newsletter. Second are the occasional papers which provide informative, focused and up to date management strategies on dune and shingle. Surprisingly the website ranked lower than expected, this maybe because of the difficulties we have had re-launching the new website and transferring data from the old website to the new one. The new website is now fully operational with all occasional papers and newsletters uploaded along with additional publications. We are now aware that 98% of you find our website easy to navigate with 84% saying there is enough information. This is very positive feedback because it means that the new design and layout of the website is perfect and we have met the two basic criteria for any website to be successful, navigation and sufficient information.

We aim to cover a range of topics in the newsletters and workshops. For newsletters there was most interest in habitat management with 71% (n=42) of respondents wishing to see this covered. More than half of respondents were interested in dune stabilisation, geomorphology and shoreline management and some 40-50% were interested in invertebrates, hydrology, beach/strandline, dune slacks and dune grassland. Similarly, for events habitat management was also the most popular with 62% (n=33) of respondents showing interest. Shoreline management and geomorphology were also popular with 47% (n=25) and 49% (n=26) respectively. Other topics of interest for workshops were hydrology, invertebrates, dune grassland and dune stabilisation, with less interest shown in scrub/woodland, archaeology, cultural heritage and shingle.

The results confirm that the newsletter, occasional publications and website are useful tools and this remains the focus of our core work.

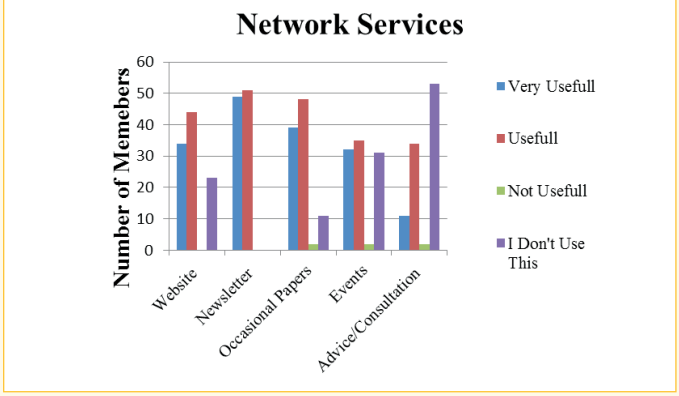

Table 2: Network services organised in categories from 'Very Useful' to 'I Don't Use This'

Mark Whitfield

A dune rejuvenation feature on the Sefton Coast – the Devil's Hole

Philip H. Smith & Patricia A. Lockwood

Over recent decades, attention has been drawn to the increasing problem of vegetation overgrowth and loss of bare sand on coastal dunes in northwest Europe (Houston 1997; Wanders 1989). Dune reactivation work in the Netherlands and Denmark began in the late 1980s but the UK has been slow to adopt a similar approach. However, Howe *et al*. (2012) describe a rejuvenation trial at Kenfig NNR, South Wales, where vegetation was recently removed from 3.5ha of frontal dune and an associated slack. Further excavations took place at Newborough Warren, Anglesey, in spring 2013.

Much of England's largest dune system on the Sefton Coast, Merseyside has also become increasingly overgrown since the 1950s, the main exceptions being where moderate to high levels of informal recreation create and maintain areas of bare sand (Smith 2000; 2012). In the southern part of the dune system, significant sand mobility is now largely restricted to one site in Ravenmeols Sandhills Local Nature Reserve, known locally as the "Devil's Hole" (Grid Reference SD278054); this is a spectacular blow-out and the largest feature of its type on the coast. Its origin is thought to be due to a German land-mine explosion in 1940 or 1941. Instead of having an open face to windward, as in most blow-outs, the Devil's Hole still resembles a crater, with steep slopes on all sides. Wind erosion has created an enormous bowl at least 10m deep, deflated sand over-blowing the original dunes downwind and inundating part of an adjacent conifer plantation. Using aerial photographs, Read (1995) showed that the feature grew at an average rate of 4.5m per year, achieving a total area of 2.55ha by 1993. In 1991, it reached the water-table and began to flood in wet winters. Including its downwind sand-sheet, the main basin is currently about 317m long and has a maximum width of 104m. The entire structure now covers about 4ha, 57% larger than in 1993.

Devil's Hole blowout-May 2013

Wet-slack vegetation began to develop in 2003, studies revealing a rapid increase in the number of vascular plant taxa from 16 in 2004 to 105 in 2012, about 20% being regionally or nationally notable, including an enormous population of Grass-of-Parnassus (*Parnassia palustris*). Communities are a mosaic of SD13: *Sagina nodosa-Bryum pseudotriquetrum* dune-slack and SD14: *Salix repens-Campylium stellatum* dune-slack. These nationally scarce slack communities are declining elsewhere on the Sefton Coast (Gateley & Michell 2004; Rodwell 2000).

Grass-of-Parnassus, Devil's Hole August 2012

The site's fauna is also of conservation interest. From 1993, the presence of standing water in some springs attracted Natterjack Toads (*Epidalea calamita*) to breed, Another flag-ship species for the Sefton Coast, the nationally rare Northern Dune Tiger Beetle (*Cicindela hybrida*), is regularly seen in summer on the bare sandy slopes.

Inherent instability for about 70 years has maintained open conditions in an area that is coincidentally about the same size as the rejuvenation site at Kenfig. Howe et al. (2012) emphasise that engagement with stakeholders and the wider public is needed to gain support for what might be seen by some as a controversial, potentially risky, approach to management. The fact that the Devil's Hole survived an era in which dune stabilisation was the norm and is accepted without acrimony in a dune system close to large population centres provides an encouraging model.

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Howe, M., Litt, E. & Pye, K. (2012). Rejuvenating Welsh dunes. British Wildlife 24: 85-94.

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News from Wales

On 1st April 2013 Natural Resources Wales was born from an amalgamation of the functions of the Countryside Council for Wales, Forestry Commission Wales and the Environment Agency Wales. The website http://naturalresourceswales.gov.uk/ will gradually take on the information currently available on the websites of the three bodies.

The Invertebrates of Baglan Burrows

Steve Bolchover and Mike Howe*

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Baglan Burrows (VC41: site centroid SS724924) comprises 65ha of sand dune and 19ha of salt marsh on the south-eastern mouth of the Neath Estuary, extending along the seafront to Aberavon. It is a remnant of the 3,300ha of sand dune and blown sand habitats which used to occur along the 26-mile coastline of Swansea Bay from Blackpill to the Ogmore River before 65% was lost to industrial and urban development (Howe et al., 2012). It lies between Crymlyn Burrows SSSI to the immediate west on the other side of the Neath Estuary, and the extensive dune systems of Kenfig NNR and Merthyr Mawr Warren NNR some 10.5km and 19km to the south-east respectively.

Apart from a rapid survey in 2009 (Bolchover, 2009), we knew very little about the invertebrate fauna of Baglan Burrows with most entomological attention being paid to the neighbouring dune systems. However, a survey in 2012 recorded 387 species, including 63 species dependent upon dune habitats (Bolchover, 2013). Of these, 49 species (78%) are associated with pioneer conditions including the strandline, stands of marram, bare & sparsely-vegetated sand and low-growing plants in open sand, with 12 species (19%) associated with more mature habitats (mostly fixed dune grassland). Key species recorded during the survey include the tiger beetle *Cicindela maritima*, the stiletto fly *Thereva fulva*, the solitary wasp *Mimumesa littoralis* and the solitary bees *Colletes marginatus* and *Megachile dorsalis*. The total of 63 dune species compares to 181 species on Kenfig NNR and 136 species on Crymlyn Burrows, but these dunes have a long history of invertebrate recording.

Tiger beetle *Cicindela maritima* © Barry Stewart

The rich mosaic of habitats on Baglan Burrows including open dunes, dune slacks, saltings, freshwater, brackish marsh, fen, woodland and scrub are all essentially important for invertebrates. Whilst some disturbance helps to retain the pioneer conditions required by many of the key dune invertebrate species, current levels of vehicular access are excessive and some regulation of vehicle access is required.

References

Bolchover, S. 2009. Survey of sand dune systems for BAP invertebrates 2009. Unpublished report for Neath-Port Talbot County Borough Council.

Bolchover, S. 2013. An invertebrate survey of Baglan Burrows in 2012. CCW Science Report 1028.

Howe, M.A., Litt, E. & Pye, K. 2012. Rejuvenating Welsh dunes. British Wildlife, 24: 85-94.

Dune re-mobilisation in Wales: an update

Following work at Kenfig Burrows and Merthyr Mawr the dune remobilization project in Wales has moved to Newborough Warren and Ynys Llanddwyn National Nature Reserve (see cover photo). The aim is to create small, new areas of bare, open sand and dune slacks, which will boost the survival chances of some of the sand dunes' rarest plants and insects, including petalwort, sand wasps, mining bees and rare beetles.

Heavy machinery was used to give nature a helping hand, by starting to create small areas of open sand and young dune slacks at the seaward end of the Warren. And it's not just wildlife that will benefit – naturally mobile sand dunes provide a more dynamic coastal defence system which can adapt to storms and sea level change.

Graham Williams, Newborough Warden for Natural Resources Wales said: "Recent research and survey work undertaken at Newborough Warren has revealed a staggering loss of 94% of areas of open, mobile sand dunes, eliminating the conditions necessary for the specialist wildlife of dunes to flourish. Just three per cent of the dune system at Newborough is now bare sand and much of that is in localised patches. It shows just how much the reserve has become heavily vegetated over the years. With some intervention now, I'm confident that rare insects will start to recolonise the areas almost immediately, and rare plants will find a foothold within two years. By halting the loss of nationally significant species and habitats, we'll be going some way towards restoring the diversity and balance of habitats in the dunes once again"

Dutch expert meeting on dune management

Across much of north-west Europe we share similar problems and challenges in seeking to maintain and restore habitat quality. Networking is as important as ever and is actively encouraged by the European Commission through the LIFE programme. With this background, the Amsterdam Dunes LIFE+ project assembled a group of experts in April 2013 to discuss the particular challenges facing the Dutch dunes.

This was an opportunity to look in some detail at the science under-pinning much of our work and to share our thoughts on tricky issues such as the control of invasive species, management to ameliorate the impact of Nitrogen deposition and bringing back bare sand and dynamics.

Of particular relevance to the UK situation is the Dutch experience in the restoration of grey dunes (EU priority habitat 2130). Mark van Til of WaterNet described how experimental sod-cutting began in the Rozenwaterveld area of the Amsterdam Dunes in 2002. This is an area of calcareous hinterdunes (old dunes of the *Taraxaco-Galietum veri* association). After monitoring had confirmed the beneficial effects on flora and fauna the project was up-scaled in 2009.

The problems on fixed dunes include invasion of *Rosa pimpinellifolia* and *Calamagrostis epigejos*. From ecological mapping the landscape could be categorised as:

1. No encroachment –no measures required
2. Slight encroachment- mowing
3. Encroachment with *Rosa pimpinellifolia*- 5 cm sod cutting
4. Encroachment with *Calamagrostis epigegos* -10 cm sod-cutting

Monitoring included vegetation, rabbits, grasshoppers and butterflies. The sod-cutting resulted in a gradual comeback of grey dune species (*Viola curtisii, V. rupestris, Erodium cicutarium* and *Thymus pulegoides*), a rapid recovery of rabbit numbers, an increase in grasshoppers and an increase in Red Data Book butterflies.

Rozenwaterveld: landscape mosaic created by shallow sod-cutting

The shallow sod-cutting technique is effective for the restoration of grey dune habitats overgrown by coarser species. Success factors included the small scale approach, nearby relic populations and good structural diversity. The up-scaled work in 2009-2010 gave similar results although in 2010 there was a collapse of the rabbit population and sheep grazing was introduced as a follow up measure.

See http://databases.eucc-d.de/files/documents/00000335_Artikel%206_Tiel_Kooijman.pdf for an early report on the work.

There are things happening on the Dutch coast which would have been unheard of a few decades ago. The Dutch policy of dynamic preservation of the coastline by means of sand nourishment introduced in 1990 has provided a small excess of sand in the beach zone. And so this policy has allowed a number of still rather experimental projects to develop in the beach/dune zone. The latest of these, carried out in January 2013, at Noordvoort in the Amsterdam Dunes involved the creation of a series of cuts in the frontal sand dyke to allow sand to be funnelled through from the beach. The beach in this area will also be zoned for nature and the sea defence barbed wire fencing, so typical of the mainland coast, will be removed along a 1 km frontage. A viewing platform is linked to the recreation network.

Project Noordvoort: creation of cuts in the artificial foredune to encourage sand transport

The Amsterdam Dunes project is also tackling the problem of the invasive species *Prunus serotina*, removal of pine plantations and restoration of dune slacks and pools. At the end of the project, in 2016, an international conference will be held for knowledge exchange. We hope to continue working closely with our colleagues in Waternet over the coming years.

The Amsterdam Dunes LIFE+ project is co-financed by the EU and the Province of North Holland

John Houston

Recent Publications

Geomorphology

Doody, J,P. (2013) Coastal squeeze and managed realignment in southeast England, does it tell us anything about the future?, Managing Estuarine Sediments, 79 pp. 34-41

Robins N S, Pye K & Wallace H 2013. Dynamic coastal dune spit: the impact of morphological change on dune slacks at Whiteford Burrows, South Wales, UK. Journal of Coastal Conservation. doi 10.1007/s11852-013-0245-4

Roper, T. Greskowiak, J. Freund, H. Massmann, G, (2013) Freshwater lens formation below juvenile dunes on a barrier island (Spiekeroog, Northwest Germany), Estuarine Coastal and Shelf Science, 121, pp. 40-50

Vegetation

Alvarez-Molina, L, L. Martinez, M. L. Lithgow, D. Mendoza-Gonzalez, G. Flores, P. Ortiz-Garcia, S. Moreno-Casasola, P, (2013) Biological Flora of Coastal Dunes and Wetlands: *Palafoxia lindenii* A. Gray, Journal of Coastal Research, 23 (3), pp. 680-693

Frosini, S. Lardicci, C and Balestri, E, (2013) Global Change and Response of Coastal Dune Plants to the Combined Effects of Increased Sand Accretion (Burial) and Nutrient Availability, Plos One, 7 (10), pp. 10

Hayes, M. and Kirkpatrick, J.B. (2012). Influence of *Ammophila arenaria* on half a century of vegetation change in eastern Tasmanian sand dune systems. Australian Journal of Botany 60(5): 450-460

Le Bagouisse-Pinquet, Y., Forey, E., Touzard, B. and Michalet, R. (2013). Disentangling the effects of water and nutrients for studying the outcome of plant interactions in sand dune ecosystems. Journal of Vegetation Science, 24: 375-383. Doi:10.1111/j.1654-1103.2012.01462.x

Lonard, R, I. Judd, F,W. Stalter, R. (2013)The Biological Flora of Coastal Dunes and Wetlands: *Sporobolus virginicus* (C. Linnaeus) K. Kunth, Journal of Coastal Research, 29 (3) pp. 706 716

Management

Nicholls, R,J. Townend, I,H. Bradbury, A,P. Ramsbottom, P. Day, S,A. (2013) Planning for long-term coastal change: Experiences from England and Wales, Ocean Engineering, In Press

Harley, M, D. Ciavola, P,(2013) Managing local coastal inundation risk using real-time forecasts and artificial dune placements, Coastal Engineering, 77 pp. 77-90

Monitoring

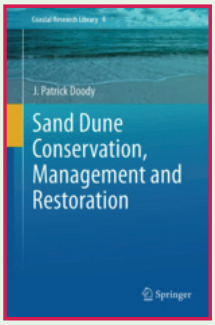
Jackson, D.W.T, Beyers, M, Delgado-Fernández, I, Baas, A.C.W, Cooper, A.J,Lynch, K, (2013) Airflow reversal and alternating corkscrew vortices in foredune wake zones during perpendicular and oblique offshore winds, 187 pp. 86-93

Juel, A. Ejrnæs , R. Fredshavn, J. Groom, G. (2013) Integrating field survey and orthophoto information to monitor coastal habitats — A pilot study to develop methods and resolve key issues, Ecological Informatics, 14, pp.48-52

Robins, N. S. Jones, M. L. M (2013) Ecohydrological 'indicators of alteration' - a robust measure of change in dune slacks, Ecohydrology, 6 (2) pp. 256-263

New books

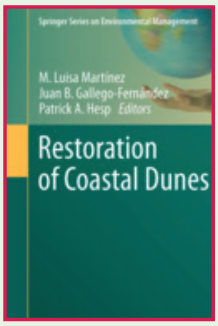
We would like to highlight two significant publications which we will review in future newsletters.



Sand Dune Conservation, Management and Restoration J. Patrick Doody

The book, published in Springer's coastal research library series, deals with the development of temperate coastal sand dunes and the ways these have been influenced by human activity. The different states in which the habitat exists both in the beach/foredune and inland dune are reviewed against the pressures exerted upon them. Options for management are considered and the likely consequences of taking a particular course of action highlighted

Doody, J.P. (2013). Sand Dune Conservation, Management and Restoration. Springer. ISBN 978-94-007-4731-9. Hardcover £90 also available as eBook.



Restoration of Coastal Dunes Luisa M Martinez, Juan B Gallego-Fernández and Patrick A Hesp

The book, published in Springer's environmental management series, deals with coastal dune restoration from a global perspective. As human populations exert more pressure on coastal environments restoration activities will become increasingly important. Sand shores and coastal dunes will require significant restoration efforts. The book presents a review of case studies where 'successful' and 'failed' approaches from around the worlds are contrasted and compared.

Chapters include studies from USA, Mexico, New Zealand, the Netherlands, Wales, Spain and Israel

Martinez, L.M., Gallego-Fernanez, J. B. and Hesp, P.A. (2013). Restoration of Coastal Dunes. Springer. ISBN 978-3-642-33445-0. Hardcover £117 also available as eBook.

Dutch dune research topics

A series of articles in Dutch (with English captions to tables and summaries) is published in the journal Landschap (2012, No. 3). The articles can be accessed on-line at http://www.landschap.nl/content/view/155/81/ Topics include how dry dunes might cope with drought (Witte *et al*.), how re-establishing the sand transport corridors from beach to inner dunes might increase the success of remobilisation projects (Arens *et al*.) and the continuing challenge of reducing Nitrogen loads in dune grasslands (Kooijman *et al*.). The short articles are well illustrated and provide a reference list, mainly of Dutch studies.

Tentsmuir-the dynamic coast

It is always a pleasure to read Tom Cunningham's reports from Tentsmuir-you can almost feel the wind whistling through the grass! In edition 29 of the reserve newsletter he writes "astonishing, gobsmacking, overwhelming, jaw-dropping": just some of the terms used to describe the sand drift across the dune heath as winter storms and easterly gales swept sand far inland.

Every winter Tentsmuir sees blow-outs and windblown sand up to 70 metres inland but the winter of 2012-2013 has been exceptional. Several months later there are signs that the sedges, grasses and heathers are poking through and some westerly winds have helped by blowing sand back towards the foreshore. In the south of the Reserve there was some erosion uncovering virgin looking coastal defence concrete blocks along with corrugated steel shuttering which was used to form moulds for the blocks. Further south, the dune system grows further into the sea.

Dune erosion revealed sheets of corrugated iron. These were used as the moulds for pouring concrete into to construct the concrete anti-tank traps in WWII. The tank traps were made during 1939-40 by regiments of the Polish Army who were based in the adjacent forest.Photo© Tom Cunningham

European News

The next European Dune Network newsletter will be published in November 2013. It will report on the work of LIFE+ projects including the new 'SandLIFE' project in Sweden (http://sandlife.se/), news from national dune networks and an update on the Article 17 process. Article 17 reports have been published by several Member States for comments prior to being finalised and submitted to the European Commission. By 2014 there should be publication of national reports on the EEA website.

Forthcoming Events

Conserving Scottish Machair LIFE+ Conference, South Uist, 29 August 2013

The Conserving Scottish Machair LIFE+ project is holding a one-day symposium to review the work of the four year EU-funded project and to discuss future policy for machair conservation and biodiversity. The symposium will be held on South Uist, Western Isles, Scotland, on Thursday 29 August. On Friday 30 August there will be field trips followed by a ceilidh and on Saturday 31 August there will be a 'Mad Machair Tea Party' for crofter friends and families to which everyone is invited. For more information and bookings: www.machairlife.eventbrite.co.uk or contact Matthew Topsfield on 01870 603361

For information on the project visit http://www.machairlife.org.uk/

Sand Dune Hydro-Ecology meeting: Dealing with dynamics and extremes, Swansea, Monday 9-Wednesday 11 September 2013

The hydrology and ecology of coastal sand dune systems are influenced by both natural and anthropogenic factors such as dynamic coastal processes, development and management within the dune system and short- and long-term climatic patterns. In this meeting we aim to share management and research experience of these influences and discuss and develop the tools required to help us deal with them as effectively as possible. Guest speakers include Professor Ken Pye, Dr Johan Schutten and Professor Pieter Stuyfzand.

The meeting will include field trips to Whiteford Burrows and Kenfig Burrows dune sites. To register or if you are interested in presenting your work either as a presentation or poster please contact Charlie Stratford (cstr@ceh.ac.uk).

Conservation, Management and Restoration of Coastal Cliffs and Lake Bluff, Llandudno, North Wales 16-19 September 2013.

Liverpool Hope University in partnership with the Coastal and Marine Union EUCC are holding an international symposium exploring the conservation, management and restoration of coastal cliffs and lake bluffs. Understanding the significance of these areas and their management requirements in the face of human exploitation and the impact of climate change is a major challenge. In order to identify the status, issues and management requirements of these areas a symposium is organised. The programme for the symposium is now available on the website at www.hope.ac.uk/cliffs.

This newsletter has been complied by John Houston and Mark Whitfield

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Website http://coast.hope.ac.uk/

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The Sand Dune and Shingle Network is based at Liverpool Hope University

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